

CLAIMS

What is claimed is:

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1. A jacket for a radiographic camera, comprising:
a front end of the jacket;
5 a back end of the jacket opposite the front end;
a handle positioned between the front and back ends of the jacket; and
a reinforcement structure in the handle that supports the handle.
2. The jacket of claim 1 wherein the reinforcement structure in the handle includes a
10 wire.
3. The jacket of claim 2 wherein the reinforcement structure in the handle includes a
protective element.
- 15 4. The jacket of claim 3 wherein the protective element is tubing.
5. The jacket of claim 4 wherein the wire and the tubing are stainless steel and the
jacket is molded polyurethane.
- 20 6. The jacket of claim 2 wherein the jacket defines an opening to receive the
radiographic camera, that extends through the front end of the jacket to the back end of
the jacket, wherein the wire surrounds the opening at the front end, extends through the
handle of the jacket, and surrounds the opening at the back end of the jacket.
- 25 7. The jacket of claim 6 further comprising at least one ferrule provided in the
handle for securing ends of the wire.
8. The jacket of claim 1 wherein the jacket is adapted to be removably secured to
the radiographic camera.

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9. In a radiographic camera having a housing containing a source surrounded by a
shield assembly, the shield assembly comprising:

a shield having a first shield end and a second shield end; and
an endplate having a first surface that is secured to the first shield end.

10. The shield assembly of claim 9 further comprising a bracket provided on the first
5 surface of the endplate that is secured to the first shield end.

11. The shield assembly of claim 10 further comprising a pin to removably secure the
first shield end to the bracket of the endplate.

10 12. The shield assembly of claim 11 further comprising a second endplate with a
second surface provided with a second bracket removably secured to the second shield
end by a second pin.

13. The shield assembly of claim 11 wherein the pin is solid titanium, the shield is
15 depleted uranium, and the endplate and bracket are stainless steel.

14. The shield assembly of claim 13 further comprising a spacer made of copper
positioned between the shield and the bracket.

20 15. The shield assembly of claim 10 wherein an port outlet is formed through the
endplate and bracket for receiving a conduit for the source.

25 16. A radiographic camera apparatus, comprising:
a housing having an interior chamber with a first opening and a second opening
formed therein;
a lock assembly provided at the first opening;
a connector assembly provided at the second opening;
a conduit within the housing that communicates with the lock assembly and the
connector assembly, a pathway formed by the conduit to an exterior of the housing
30 through the connector assembly; and
a shield surrounding the conduit within the housing, the shield secured to the
housing.

17. The radiographic camera apparatus of claim 16, further comprising:
at least one endplate having a first surface, and provided at the first opening of
the housing;

5 wherein the shield has a first shield end and a second shield end, the first shield
end secured to the first surface of the endplate.

18. The radiographic camera apparatus of claim 17 further comprising a bracket
secured to the first surface of the endplate, and the shield secured to the bracket.

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19. The radiographic camera apparatus of claim 18 further comprising a second
endplate provided at the second opening of the housing, the second endplate having a
first surface with a second bracket attached thereto, and each endplate having a pin
removably securing the first and second shield ends to the first and second brackets,
15 respectively.

20. The radiographic camera apparatus of claim 19 wherein the endplates are welded
to the first and second openings of the housing.

20 21. The radiographic camera apparatus of claim 16 wherein the shield is depleted
uranium.

25 22. A connector assembly for a radiographic camera, comprising:
a housing containing a source in a pathway surrounded by a radiation shield;
a first end of the housing, having a first opening at a first endplate in
communication with the pathway;
a shield protector adapted to selectively block and unblock the first opening;
a front plate adjacent the shield protector, the shield protector provided between
the first endplate and the front plate, the front plate having a second opening aligned with
30 the first opening and adapted to receive a guide cable fitting that allows the shield
protector to unblock the first opening and expose the source.

23. The connector assembly of claim 22, wherein the shield protector is a rotor rotatably attached to an interior surface of the front plate between the front plate and the first endplate a first rotor hole formed in the rotor locating a port shield to be aligned with the first opening, and a second rotor hole adapted to be aligned with the first opening upon rotation of the rotor.

24. The connector assembly of claim 23 further comprising a slider adjacent the rotor that prevents rotation of the rotor, wherein the second opening is adapted to receive the guide cable fitting to move the slider to allow the rotor to rotate and expose the first opening through the second rotor hole.

25. The connector assembly of claim 24 further comprising a knob rotatably attached to an exterior surface of the front plate and positioned to cover and uncover the second opening, wherein the knob is rotatable to expose the second opening such that the guide cable fitting is insertable within the second opening to move the slider, and the knob is thereby further rotatable to cause the rotor to rotate to align the second rotor hole with the first opening and the second opening to expose the source.

26. The connector assembly of claim 23 wherein the port shield is tungsten.

27. A radiographic camera apparatus, the apparatus comprising:
a housing having an interior chamber, a first opening and a second opening formed by the housing;
a lock assembly in communication with the housing at the first opening;
a front plate having an interior and an exterior surface and defining a hole, the front plate in communication with the housing to align the hole with the second opening;
an conduit within the housing and in communication with the lock assembly at one end and the front plate at the other end, a pathway formed by the conduit to an exterior of the housing through the front plate; and
a rotor rotatably attached to the interior surface of the front plate, the rotor defining a first rotor hole aligned with the second opening and having a shield therein,

and the rotor defining a second rotor hole for alignment with the second opening upon rotation of the rotor.

28. The apparatus of claim 27 further comprising a knob rotatably attached to the exterior surface of the front plate and positioned to rotatably cover and uncover the hole of the front plate, wherein the knob is rotatable to expose the hole in the front plate and the shield in the first rotor hole, and the knob is further rotatable to cause the rotor to rotate to align the second rotor hole with the second opening.

29. The connector assembly of claim 27 further comprising a slider adjacent the rotor that prevents rotation of the rotor, wherein when the slider is caused to move the rotor is allowed to rotate and expose the second opening through the second rotor hole.

30. The connector assembly of claim 29 wherein upon insertion of a fitting into the hole of the front plate, the fitting is rotated and causes the slider to move, thereby allowing the rotor to rotate and expose the second opening through the second rotor hole.

31. The connector assembly of claim 30 further comprising at least one ear on the fitting, wherein the ear fits within the hole and upon rotation of the fitting interacts with and moves the slider to allow rotation of the rotor to occur.

32. A connector assembly for a radiographic camera, comprising:
a connection element adapted to engage with a guide cable, the connection element including an opening aligned with a radiation source opening in the camera through which a radiation source can pass;
a shield protector that may be moved between blocking and unblocking positions, where in the blocking position the shield protector blocks the radiation source opening and in the unblocking position the shield protector does not block the radiation source opening; and
a lock that is adapted to lock the shield protector in the blocking position and is adapted to unlock the shield protector upon activation of a key to allow the shield protector to move to the unblocking position.

33. The connector assembly of claim 32, wherein:

the shield protector comprises a rotor that may rotate to block and unblock the radiation source opening, and the lock comprises a slider that is adapted to engage with a key to unlock the rotor from the blocking position.

34. The connector assembly of claim 33, further comprising: a knob adapted to move the rotor to unblock the radiation source opening upon engagement of the slider within the key.

35. The connector assembly of claim 32, wherein the lock is adapted to engage with a guide cable fitting that acts as a key.

36. The connector assembly of claim 35, wherein the lock comprises a slider that unlocks the shield protector from the blocking position when the guide cable fitting is secured to the opening in the connection element.

37. A method of operating a radiation camera, comprising:
unlocking a shield protector that blocks a radiation source opening in the camera;
moving the shield protector to unblock the radiation source opening; and
moving a radiation source from within the camera through the radiation source opening.

38. The method of claim 37, wherein the step of unlocking the shield protector comprises attaching a guide cable fitting to the camera.

39. The method of claim 38, wherein the step of unlocking the shield protector comprises engaging the guide cable fitting with a slider.

40. The method of claim 37, wherein the step of moving the shield protector comprises rotating a knob attached to the shield protector to align a hole in the shield protector with the radiation source opening.